BIOPESTICIDE REGULATORY ACTION DOCUMENT

Yeast Extract Hydrolysate from *Saccharomyces cerevisiae*
(PC Code 100053)

U.S. Environmental Protection Agency
Office of Pesticide Programs
Biopesticides and Pollution Prevention Division
2/12/2004

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(PC Code 100053)

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I. EXECUTIVE SUMMARY

A. IDENTITY/MODE OF ACTION

The active ingredient Yeast Extract Hydrolysate from *Saccharomyces cerevisiae* is mixed with micronutrients to formulate the end use product known as KeyPlex 350. KeyPlex 350 aids in the prevention of certain plant diseases, such as post-bloom fruit drop and greasy spot diseases of citrus, and bacterial leaf spot disease of tomatoes, by eliciting the crop plant's natural defense mechanisms. The Manufacturing Use Product (MP) is prepared from hydrolyzed Brewer's yeast protein, with subsequent oxidation of its constituent amino acids. The End Use Product is formulated with the addition of micronutrients, and is intended as a nutritional alternative to conventional fungicides.

B. USE/APPLICATION

Yeast Extract Hydrolysate is proposed for use on all food commodities, turf and ornamentals. It is formulated as a liquid for application with conventional ground or aerial spray equipment, or with fertigation (low volume irrigation) systems. Use rates are extremely low, generally not more than a total of 7.1 milliliters of hydrolyzed yeast extract per acre per year.

C. RISK ASSESSMENT

Health Effects

The end-use product KeyPlex 350, is classified as a Toxicity Category IV product via the oral route; Toxicity Category IV for skin irritation, and Toxicity Category III for eye irritation. All other toxicity studies were waived for the following reasons: a) no effects were observed in an acute oral study conducted on the end-use product, KeyPlex 350 containing 0.063% Yeast Extract Hydrolysate from *Saccharomyces cerevisiae* at the limit value of 5g/kg; b) Yeast Hydrolysate Liquid (MP) is made from Brewer's yeast extract, (a.k.a. Baker's yeast) which is the water soluble portion of autolyzed yeast (*Saccharaomyces cerevisiae*), and contains protein, peptides, free amino acids, vitamins, minerals and trace elements. Brewer's yeast extract is cleared by the Food and Drug Administration (FDA) as a flavor enhancer for soups, soy sauce, sausage, fruits, etc., and also used as a nutritional supplement, since it is rich in B-vitamins. Brewer's yeast extracts are used in hundreds of foods at levels up to 2.0%, as consumed, which is significantly higher than levels of yeast extract in the end-use

product (0.063%); c)Brewer's or Baker's yeast extracts are considered GRAS (21 CFR 184.1983); d) all inerts used in KeyPlex 350 are either already exempt from the requirement of a tolerance under 40 CFR 180.1001 (c) or (d), or are common fertilizer ingredients cleared for food use by FDA (GRAS); e) KeyPlex 350 containing 0.063% Yeast Extract Hydrolysate from *Saccharomyces cerevisiae* has been sold as a plant micronutrient product for over 20 years, with no adverse effects ever reported; and f) label directions allow a maximum of 7.1 milliliters of hydrolyzed yeast to be applied per acre per year.

Ecological Effects

All non-target toxicity studies have been waived because of the lack of toxicity of the End Use Product (LD_{50} >5 g/kg); extremely low use rates and lack of stability in the environment.

II. OVERVIEW

A. ACTIVE INGREDIENT OVERVIEW

A.I. Name: Yeast Extract Hydrolysate from *Saccharomyces cerevisiae*

Product Name: KeyPlex 350

P.C. Code: 100053

Basic Manufacturer: Morse Enterprises Limited, Inc.
151 South East 15 Road
Brickell East, Floor Ten
Miami, FL 33129

B. USE PROFILE

Type of Pesticide: Biochemical

Use Sites: All food commodities; turf and ornamentals

Target Pests: Aids in the prevention of certain plant diseases, such as post-bloom fruit drop and greasy spot diseases of citrus, and bacterial leaf spot disease of tomatoes.

Formulation Types: Keyplex 350 is an end-use product formulation containing 0.063% yeast hydrolysate, with chelated micronutrients, in a liquid formulation.

Method and Rates of Application: KeyPlex 350 may be applied by conventional ground or aerial foliar application, or by fertigation (low volume irrigation). Application rates for most crops and turf range from 1 to 3 quarts per acre, with applications generally repeated at 14-21 day intervals.

Type of Treatment: Foliar spray; fertigation (low volume irrigation).

Equipment: Conventional ground or aerial spray equipment; low volume irrigation systems.

Timing: For citrus, foliar spray applications pre-bloom, at petal fall, and 1-2 summer sprays tank mixed with summer oil. For vegetables, including tomato and pepper, foliar sprays starting at 4-6 leaf stage, two applications pre-bloom and four applications post-bloom. For turf and most other crops, spray applications pre-bloom, and two applications post-bloom; for annuals, first spray at the 4-6 leaf stage.

Use Practice Limitations: No limitations. Recommended addition of 3-5 pounds of urea or potassium nitrate per 100 gallons of water to aid leaf penetration.

C. DATA REQUIREMENTS

All data requirements have been satisfied for registration of this biochemical pesticide under Section 3(c)(5). The Agency has reviewed the data required for the proposed uses of this pesticide under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) as amended by the Food Quality Protection Act (1996). For Yeast Extract Hydrolysate from *Saccharomyces cerevisiae*, the product identity and product analysis information, as well as data submitted or waived to assess acute mammalian toxicology are sufficient to support the proposed use patterns. All non-target organism toxicity studies have been waived based on the fact that Brewer's (Baker's) yeast extracts, from which the active ingredient is derived, are considered GRAS (21 CFR 184.1983), commonly added to foods as a flavor enhancer and used as nutritional supplements at levels exceeding the concentration in the KeyPlex 350 end-use product

D. REGULATORY HISTORY

EPA received an application from Interregional Research Project No 4 (IR-4), on behalf of

Morse Enterprises Limited, Inc., to register the active ingredient Yeast Extract Hydrolysate from *Saccharomyces cerevisiae*. A Notice of receipt of this application was published in the Federal Register (FRL-7316-7) on August 6, 2003 (68 FR 46607).

Concomitant with the application for the Section 3 registration, the registrant filed a petition (PP 2E6383) requesting an exemption from the requirement of a tolerance for the active ingredient in or on all food commodities. A Notice of Filing was published in the Federal Register (FRL-7316-8) on August 6, 2003 (68 FR 46613).

E. FOOD CLEARANCES/TOLERANCES

The Agency evaluated data under Section 408 of the Federal Food, Drug and Cosmetic Act (FFDCA) as amended by the Food Quality Protection Act (FQPA) of 1966**.** Safety factors were considered for human health effects, as well as aggregate and cumulative exposures. Dietary exposure from the potential secondary transfer of residues to drinking water during applications of the pesticide were also considered. The data submitted are sufficient to support the exemption from the requirement of a tolerance in or on all food/feed commodities.

III. SCIENCE ASSESSMENT

A. Physical and Chemical Properties Assessment

Product Identity and Mode of Action

The End-Use Product (EP) is identified as KeyPlex 350, with the active ingredient (TGAI), Yeast Extract Hydrolysate from *Saccharomyces cerevisiae*, contained at the final concentration of 0.063%, with added micronutrients and fertilizer components. The Manufacturing Use Product (MP) is comprised of Yeast Extract Hydrolysate from *Saccharomyces cerevisiae* contained at 2.5%. The protein from Brewer's yeast, from which the A.I. is derived, is hydrolyzed during the manufacturing of the MP into its constituent amino acids, which are then oxidized and chelated. Yeast Extract Hydrolysate from *Saccharomyces cerevisiae* aids in the prevention of certain plant diseases, such as post-bloom fruit drop and greasy spot disease of citrus, and bacterial leaf spot disease of tomatoes, by eliciting the crop plant's natural defense mechanisms.

Table I. Physical and Chemical Properties for Keyplex 350

Guideline Number	Study	Results	MRID Number
OPPTS 880-1100	Product Identity and Composition	Acceptable. Hydrolyzed Brewer's yeast protein	45546801 45823701

OPPTS 880.1200	Manufacturing Process	Acceptable	45546801
OPPTS 880.1400	Formation of Impurities	Acceptable. No impurities of toxicological significance. Gaseous NO_2 minimized by manufacturing process.	45546801
OPPTS 880.1700	Preliminary Analysis	Chromatographic method acceptable for MP and EP	45546802 45823702
OPPTS 880.1750	Certified Limits	Acceptable for both MP and EP	45823702
OPPTS 880.1800	Enforcement Analytical Method	Acceptable. See Preliminary Analysis	45546802 45823702
OPPTS 880.6302-880.7050	Physical/Chemical Properties	Acceptable. Storage stability-1 month	45546802

B. HUMAN HEALTH RISK ASSESSMENT

The acute oral, dermal irritation and eye irritation studies were conducted according to Agency guidelines and demonstrated no significant adverse effects from dosing with the end product KeyPlex 350. Following from this, there is reasonable certainty of no harm from exposure to Yeast Extract Hydrolysate from *Saccharomyces cerevisiae*. All anticipated dietary and other exposures for which there are reliable information are included in this assessment. The end product KeyPlex 350 has been produced and sold as a plant nutrient for the past 20 years with no hypersensitivity or other adverse effects among workers or applicators. In addition, yeast extracts derived from mechanical disruption of *Saccharomyces cerevisiae* cells (Brewer's /Baker's yeast) are considered GRAS (21 CFR 184.1983), and are widely used as a flavor enhancer in soups, soy sauce, sausage, fruits, and other food products.

1. Human Toxicity Assessment

a. Acute Toxicity

All required mammalian toxicology data have been submitted or waived and adequately support registration. An acute oral study was conducted with the end product KeyPlex 350 at the limit value of 5 g/kg, with no deaths or adverse effects, placing this product in Toxicity Category IV. A primary dermal irritation study has shown KeyPlex 350 to be very slightly to non-irritating, placing the

product in Toxicity Category IV. An eye irritation study indicated that the product is slightly irritating to rabbit eyes, with no corneal or iridial damage and only slight conjunctival irritation which cleared within 7 days, placing the product in Toxicity Category III for primary eye irritation. Dermal toxicity, inhalation, and dermal sensitization studies were waived, based upon the following rationale: a) no effects were observed in an acute oral study conducted on the end-use product, KeyPlex 350 containing 0.063% Yeast Extract Hydrolysate from *Saccharomyces cerevisiae* at the limit value of 5g/kg; b) the Active Ingredient is made from Brewer's yeast extract, which is the water soluble portion of autolyzed yeast (*Saccharaomyces cerevisiae*), and contains protein, peptides, free amino acids, vitamins, minerals and trace elements. Brewer's/Baker's yeast extract is cleared by the FDA as a flavor enhancer for soups, soy sauce, sausage, fruits, etc., and also used as a nutritional supplement, since it is rich in B-vitamins. Brewer's yeast extracts are used in hundreds of foods at levels up to 2.0%, as consumed, which is approximately 32 times higher than levels of yeast extract in the end-use product (0.063%); c) Brewer's/Baker's yeast extracts are considered GRAS (21 CFR 184.1983); d) all inerts used in KeyPlex 350 are already exempt from the requirement of a tolerance under 40 CFR 180.1001 (c) or (d), or are common fertilizer ingredients cleared by FDA for food use (GRAS); e) KeyPlex 350 containing 0.063% Yeast Extract Hydrolysate from *Saccharomyces cerevisiae* has been sold as a plant micronutrient product for over 20 years, with no adverse effects ever reported; and f) use rates are extremely low, with label directions allow a maximum of 7.1 milliliters of hydrolyzed yeast to be applied per acre per year.

On the basis of the foregoing arguments, the following acute studies have been waived: all acute testing for the technical product (MP); acute dermal toxicity, acute inhalation toxicity, and dermal sensitization studies for the end-use product (EP), KeyPlex 350.

Table 2. Toxicity Data Requirements

Guideline Number	Study	Results	MRID Number
OPPTS 870.1100	Acute Oral Toxicity	Acceptable. LD_{50} > 5 g/kg Toxicity Category IV	45546803
OPPTS 870.2500	Primary Dermal Irritation	Acceptable. Primary Irritation Index 0.4/8.0 Toxicity Category IV	45823703
OPPTS 870.2400	Primary Eye Irritation	Acceptable. Slight conjuctival erythema cleared at 7 days. Toxicity Category III	45823704
OPPTS 870.1200	Dermal Toxicity	Waived	

OPPTS 870.1300	Acute Inhalation	Waived	
OPPTS 870.2600	Skin Sensitization	Waived	
OPPTS 870.5000 to 870.5915	Genotoxicity	Waived	
OPPTS 870.7800	Immune Response	Waived	
OPPTS 870.3100	Subchronic Feeding	Waived	
OPPTS 870.3700	Teratogenicity	Waived	

b. Subchronic Toxicity and Chronic Toxicity

Hypersensitivity testing was waived and replaced with the requirement for reporting hypersensitivity incidents in workers, handlers, and other individuals repeatedly exposed to yeast hydrolysate during manufacture and use of the product. KeyPlex 350, containing 0.063% Yeast Extract Hydrolysate from *Saccharomyces cerevisiae* has been sold as a plant micronutrient for over 20 years. No adverse effects have ever been reported. Yeast extracts occurs in hundreds of food products at concentrations significantly higher (0.1-2.0%) than in KeyPlex 350. The Manufacturing Use Product (Technical) contains only 2.5% Brewer's yeast extract.

Immunotoxicity, teratogenicity, genotoxicity and subchronic feeding studies have been waived for the following reasons:1) Brewer's yeast extract has a long history of safe use in hundreds of food items, at concentrations greater than that occurring in the end-use product, KeyPlex 350. Published literature indicates that the components of Yeast Extract Hydrolysate from *Saccharomyces cerevisiae* are rapidly degraded in the environment and in the human stomach. 2) Both the acute oral and primary dermal irritation studies place the product in Toxicity Category IV. 3) All inert ingredients in KeyPlex 350 are already exempt from the requirement of a tolerance under 40 CFR 180.1001 (c) or (d), or a common fertilizer ingredient cleared for food use by FDA (GRAS). 4) The amount of Yeast Extract Hydrolysate from *Saccharomyces cerevisiae* in KeyPlex 350 is equal to 0.0625% or 2.366 ml/gallon of KeyPlex 350. Since the maximum use rate is 3 quarts per acre per application and a maximum of

four applications can be made per year, just 7.1 ml of hydrolyzed yeast are applied per acre per year.

c. Effects on the Immune and Endocrine Systems

EPA is required under the FFDCA, as amended by FQPA, to develop a screening program to determine whether certain substances (including all pesticide active and other ingredients) "may have an effect in humans that is similar to an effect produced by a naturally-occurring estrogen, or other such endocrine effects as the Administrator may designate". Following the recommendations of its Endocrine Disrupter Screening and Testing Advisory Committee (EDSTAC), EPA determined that there was scientific basis for including, as part of the program, the androgen and thyroid systems, in addition to the estrogen hormone system. EPA also adopted EDSTAC's recommendation that the program include evaluations of potential effects on wildlife. For pesticide chemicals, EPA will use FIFRA and to the extent that effects in wildlife may help determine whether a substance may have an effect in humans, FFDCA authority to require the wildlife evaluations. As the science develops and resources allow, screening of additional hormones systems may be added to the Endocrine Disruptor Screening Program (EDSP).

The Agency is not requiring information on the endocrine effects of Yeast Extract Hydrolysate from *Saccharomyces cerevisiae* based on its long history of safe use, non-toxicity, and inconsequential exposure resulting from labeled use rates.

2. Dose Response Assessment

No toxicological endpoints have been identified.

3. Dietary Exposure and Risk Characterization

The use of KeyPlex 350 is not expected to result in any increase in dietary exposure to Yeast Extract Hydrolysate from *Saccharomyces cerevisiae* against the background of that normally consumed by the general public in hundreds of food products. Brewer's yeast extract, from which the Active Ingredient is derived, is the water soluble portion of autolyzed yeast (*Saccharomyces cerevisiae*) and contains protein, peptides, free amino acids, vitamins, minerals and trace elements. Brewer's/Baker's yeast extract is classified as Generally Recognized As Safe (GRAS) under 21 CFR 184.1983, and is used as a flavor enhancer for soups, soy sauce, sausage, fruits, and other food products at concentrations in the range of 0.1%-2.0%, as consumed, which is significantly higher than that in the end-use product (0.063%). It is also used as a human nutritional supplement since it is rich in B-vitamins. Further, all inerts in the formulation of KeyPlex 350 are either already exempt from the requirement of a tolerance under 40 CFR 180.1001 (c) or (d), or common fertilizer ingredients cleared by FDA as direct food additives (GRAS). Finally, when used according to label directions, a total of 7.1 milliliters of hydrolyzed yeast may be applied per acre per year, and the literature indicates that the components of Yeast Extract Hydrolysate from *Saccharomyces cerevisiae* are rapidly degraded in the environment.

4. Occupational, Residential, School and Day Care Exposure and Risk Characterization

a. Occupational Exposure and Risk Characterization

During the preparation and application of the end product Keyplex 350 (EP), the primary routes of exposure to the mixers and applicators would be through dermal and pulmonary routes. KeyPlex 350 is classified as a Toxicity Category IV product for the oral route of exposure, and because of its low toxicity, and common availability of the active ingredient in many food products, the requirement for acute dermal and inhalation toxicity testing was waived. Risks from dermal or pulmonary exposures are considered to be non-existent. Keyplex 350 is classified as a Toxicity Category IV product for skin irritation potential and a Toxicity Category III product for eye irritation. Appropriate precautionary label statements are required for eye irritation potential [see Section IV(C)(2)(a)(iii)]. Required personal protective equipment (PPE) for workers and handlers, including mixer/loaders and applicators is long-sleeved shirt, long pants, shoes and socks. Post-application workers and early-entry workers must wear coveralls, shoes and socks, and waterproof gloves during the restricted entry interval (REI) of 4 hours.

b. Residential, School and Day Care Exposure and Risk Characterization

Because KeyPlex 350 is applied at extremely low rates and rapidly degrades after application, the approved uses of KeyPlex 350 for field crops and commercial application to turf and ornamentals would not likely result in exposures in residences, schools or day care institutions.

5. Drinking Water Exposure and Risk Characterization

Brewer's/Baker's yeast extract, from which the active ingredient is derived, is classified as Generally Recognized as Safe (GRAS) under 21 CFR 184.1983. Further, the other ingredients used in the production of the Yeast Extract Hydrolysate from *Saccharomyces cerevisiae* are either already exempt from the requirement of a tolerance under 40 CFR 180.1001 (c) or (d), or common fertilizer ingredients cleared by FDA as direct food additives (GRAS). The concentration of Yeast Extract Hydrolysate from *Saccharomyces cerevisiae* allowable in food products is significantly higher (0.1% to 2.0%) than that in the end-use product, KeyPlex 350. Finally, because KeyPlex 350 is applied at extremely low rates and rapidly degrades in the environment, it poses no concern as a drinking water contaminant.

6. Acute and Chronic Dietary Risks for Sensitive Subpopulations, Particularly Infants and Children

KeyPlex 350 has an oral LD_{50} greater than 5 g/kg, placing the product in Toxicity Category IV, the least toxic category. Further Brewer's yeast extract, from which the Active Ingredient is derived, is a common component of hundreds of food products and is used as a human nutritional supplement

because of its high B-vitamin content. No dietary risk is expected for infants and children.

7. Aggregate Exposure from Multiple Routes Including Dermal, Oral and Inhalation

Because of the lack of toxicity, extremely low use rates and common occurrence in hundreds of food products, risk from aggregate exposures to Yeast Extract Hydrolysate from *Saccharomyces cerevisiae* is expected to be non-existent.

8. Cumulative Effects

Because of the lack of toxicity, lack of information indicating that any toxic effects, if they existed, would be cumulative with any other compounds, extremely low use rates, and common occurrence in hundreds of food products, the Agency does not expect any cumulative or incremental effects from exposure to residues of this product when used as directed on the label.

C. ENVIRONMENTAL RISK ASSESSMENT

1. Ecological Toxicity

a. Toxicity to Non-target Organisms

All non-target effects data has been waived because of a) the lack of toxicity of the end product, Keyplex 350, via the oral route (LD_{50} > 5g/kg; Toxicity Category IV); b) the GRAS classification of Brewer's/Baker's yeast extract, from which the A.I. is derived, and its presence in hundreds of food products at levels significantly higher than that found in the end-use product, KeyPlex 350 (0,063%); c) the fact that all other ingredients used in formulating this product are either already exempt from the requirement of a tolerance under 40 CFR 180.1001 (c) or (d), or a common fertilizer component cleared by FDA as a direct food additive (GRAS); and d) the extremely low use rates for this product (a maximum of four applications totaling 7.1 mls of hydrolyzed yeast extract may be applied annually).

2. Environmental Fate and Ground Water Assessment

The components of Yeast Extract Hydrolysate from *Saccharomyces cerevisiae* (proteins, peptides, vitamins, minerals and trace elements) are not expected to pose an environmental risk of any sort. KeyPlex 350 containing 0.063% Yeast Extract Hydrolysate has been sold as a plant micronutrient product for more than 20 years. All ingredients used in formulating this product are cleared for food use under FIFRA, or common fertilizer components cleared by FDA as direct food additives (GRAS).

3. Ecological Exposure and Risk Characterization

Because of the lack of toxicity of this product, common occurrence in hundreds of food products, and extremely low use rates, no environmental risk is anticipated.

IV. RISK MANAGEMENT AND REGISTRATION DECISION

A. DETERMINATION OF ELIGIBILITY

Section 3(c)(5) of FIFRA provides for the registration of a new active ingredient if it is determined that (1) it will not generally cause unreasonable adverse effects on human health or the environment when used in accordance with widespread and commonly recognized practices and (2) its labeling and other materials required to be submitted comply with the requirements of FIFRA.

To satisfy criterion (1) above, it is believed that this biochemical pesticide will not cause any unreasonable adverse effects on human health or the environment given its lack of toxicity, common occurrence in food products, extremely low use rates and instability in the environment. In addition, all data and labeling requirements have been fulfilled and found acceptable, thereby satisfying criterion (2).

Therefore, Yeast Extract Hydrolysate from *Saccharomyces cerevisiae* is eligible for registration under FIFRA Section 3(c)(5). The registered uses are contained in Table 3 or Appendix A.

B. REGULATORY POSITION

1. Registration

Data submitted are sufficient for the registration of the Manufacturing Use Product Yeast Hydrolysate Liquid and the End Use Product, KeyPlex 350 under FIFRA Section 3(c)(5) for the use patterns presented in Table 3, Appendix A.

2. Tolerance Exemption

The Agency will publish in the Federal Register a final rule exempting residues of Yeast Extract Hydrolysate from *Saccharomyces cerevisiae* concurrent with this Section 3(c)(5) registration.

3. CODEX Harmonization

There is currently no CODEX Maximum Residue Limit set for food use of this active ingredient.

4. Non-Food Registration

The registered uses for Yeast Extract Hydrolysate from *Saccharomyces cerevisiae* include turf and ornamental uses, in addition to food uses.

5. Risk Mitigation

The End Use Product, Key Plex 350 is classified as a Toxicity Category IV product for oral exposure and for skin irritation potential, and as a Toxicity Category III product for eye irritation potential. Appropriate PPE is required for pesticide handlers, which includes long sleeved shirt, long pants and socks. Early entry post-application workers must wear coveralls, shoes and socks, and waterproof gloves during the Restricted Entry Interval (REI) of 4 hours.

6. Endangered Species Statement

There are no expected toxic effects on non-target species based on toxicity and lack of expected residue. Therefore, the Agency has determined that this action will have no effect on listed species.

C. LABELING RATIONALE

1. Manufacturing Use Product Labeling

The label must include appropriate statements to indicate that the registered product is a manufacturing use product (MP) if the product is intended for use in formulating end-use products (EP). In addition, the following "Environmental Hazard" statement must be added:

> "Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA."

2. End Use Product Labeling

a. Human Health Hazard

(i) Worker Protection Standard

Any product whose labeling reasonably permits use in the production of an agricultural plant on any farm, forest, nursery, or greenhouse must comply with PR Notice 93-7, "Labeling revisions required by the Worker Protection Standard (WPS)", and PR Notice 93-11, "Supplemental Guidance for PR Notice 93-7", which reflect the requirements of EPA's labeling regulations for worker protection statements (40 CFR part 156, subpart K). These labeling revisions are necessary to implement the Worker Protection Standard for Agricultural Pesticides (40 CFR part 170). Unless otherwise specifically directed, all statements required by PR Notices 93-7 and 93-11 are to be on the product label exactly as instructed in those Notices.

The labels and labeling of all products must comply with EPA's current regulations and requirements as specified in 40 CFR 156.10 and other applicable notices, such as, and including the WPS labeling.

Workers and handlers (including mixer/loaders, and applicators) applying this product must wear long sleeved shirt, long pants, shoes and socks. Post application agricultural workers and early-entry workers must wear coveralls, shoes and socks, and waterproof gloves during the restricted entry interval (REI) of 4 hours.

(ii) Non-Worker Protection Standard

For non-agricultural users, workers must not enter the treated area without protective clothing until sprays have dried.

(iii) Precautionary Labeling

KeyPlex 350 is classified as a Toxicity IV product with respect to oral exposure and dermal irritation potential. Thus, for these routes of exposure, no precautionary statements are required. The product is classified as Toxicity Category III for eye irritation potential, therefore the following precautionary statement is required:

"Causes moderate eye irritation. Avoid contact with eyes, and skin. Wash thoroughly with soap and water after handling"

(iv) Spray Drift Advisory

Since KeyPlex 350 may be applied with conventional aerial equipment, the following language will be required:

SPRAY DRIFT FOR AERIAL APPLICATION

"Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment- and weather-related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions."

b. Environmental Hazards Labeling

"Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters."

D. LABELING

1. Manufacturing Use Product Name: Yeast Hydrolysate Liquid

Active Ingredient:
Yeast Extract Hydrolysate from *Saccharomyces cerevisiae* .....2.5 %
Other Ingredients .....97.5 %
Total ..... 100.0 %

2. End Use Product Name: KeyPlex 350

Active Ingredient:
Yeast Extract Hydrolysate from *Saccharomyces cerevisiae* ..... 0.063 %
Other Ingredients .....99.937 %
Total .....100.000 %

V. APPENDICES

A. USE SITES

Table 3. Registered Use Sites

Food Use Sites	**Official Date Registered**
All food commodities	**February 19, 2004**
Non-Food Use Sites	
Turf and ornamentals	

B. BIBLIOGRAPHY

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